Grande Ronde Bull Trout

Existing Populations

The Grande Ronde Bull Trout SMU is comprised of 12 populations, one of which is classified as extinct (Table 1). Populations are identified according to those defined in the Grande Ronde Chapter of the Bull Trout Draft Recovery Plan (2004), with the exception of Lostine and Minam populations. The USFWS Draft Recovery Plan identifies bull trout in Bear Creek and Lostine River as one local population, and Deer Creek and Minam River as another. This review defines bull trout in these streams as separate populations. ODFW radio telemetry data collected from bull trout on the Lostine River show fish consistently returning to the Lostine River (Phil Howell, USFS La Grande, personal communication) and provide no evidence of movement into Bear Creek. Fish in Lostine and Minam rivers and Deer and Bear creeks are treated as separate populations until data suggest otherwise.

Table 1. Populations, existence status, and life history of the Grande Ronde Bull Trout SMU.

Exist	Population	Description	Life History
Yes	Wenaha	Wenaha River and tributaries.	Resident /Migratory
Yes	Lookingglass	Lookingglass and Little Lookingglass creeks.	Resident /Migratory
Yes	Deer	Deer Creek and tributaries.	Resident /Migratory
Yes	Minam	Minam River and tributaries.	Resident /Migratory
Yes	Little Minam	Little Minam River above barrier falls.	Resident
Yes	Lostine	Lostine River.	Resident /Migratory
Yes	Bear	Bear and Goat Creek and tributaries.	Resident /Migratory
Yes	Hurricane	Hurricane Creek.	Resident
No	Wallowa Lake	Wallowa River above and including Wallowa Lake.	
Yes	Indian	Indian Creek.	Resident
Yes	Catherine	Catherine Creek and tributaries.	Resident
Yes	Upper Grande Ronde	Upper Grande Ronde River and tributaries, incl, Limber Jim, Indiana, Clear, Lookout, and Hoodoo creeks.	Resident

During the late 1930s and early 1940s bull trout were intentionally removed from Wallowa Lake and its tributaries to reduce predation on rainbow trout (Ratliff and Howell 1992). Migratory bull trout moving up into the lake were trapped and eliminated at a dam and a series of weirs and wild bull trout were eradicated by the 1950s (Buchanan et al.1997).

A population suspected to have been present in Wenatchee Creek, a tributary to the Grande Ronde River in Washington, is now considered extinct (USFWS 2004). This population is not included in this status review.

Distribution

Complete historical distribution is undocumented. It is thought that bull trout occupied all major tributaries in the upper Grande Ronde Basin and a seasonal connection existed with the Snake River (Buchanan et al.1997). Current known spawning and resident distribution of bull trout is spread throughout the headwaters streams of the Grande Ronde basin, though most populations are concentrated in the Wallowa River basin. Potential for inter-population connection exists through major migratory corridors and large rivers, however bull trout use of these rivers is limited by high temperatures and low flow during the summer months (USFWS 2004).

Analysis of the distribution criterion is based on 1:100,000 GIS hydrography of bull trout distribution (Hanson 2001, Buchanan et al. 1997) and information provided by ODFW biologists. These data are primarily based on summer distribution sampling that often represent the most restricted distribution. A population fails the criterion if spawning and resident distribution is 1) less than ten km, and 2) not connected to other populations. Knowledge of the historical bull trout distribution is insufficient; thus the percent of historical habitat currently occupied was not calculated for the Grande Ronde SMU. Four of the 11 existing populations fail the distribution criterion (Table 2).

Table 2. Distribution data used to evaluate Grande Ronde bull trout populations.

Population	Spawning Distribution (km)	Connected to Other Pops.	Pass/Fail
Wenaha	92.5	Yes	Pass
Lookingglass	36.3	Yes	Pass
Deer	11.1	Yes	Pass
Minam	59.6	Yes	Pass
Little Minam	19.4	No	Fail
Lostine	23.3	Yes	Pass
Bear	27.5	Yes	Pass
Hurricane	7.6	No	Fail
Wallowa Lake	*Extinct population*		
Indian	<10	Yes	Fail
Catherine	57.6	Yes	Pass
Upper Grande Ronde	<10	Yes	Fail

Due to a limited spawning and rearing distribution and isolation from other populations the Hurricane population fails the distribution criterion. Distribution of bull trout in Hurricane Creek is limited to a short section of stream upstream of a series of barriers. The Consolidated/Moonshine Ditch diversion dam prohibits upstream movement as does seasonal dewatering of reaches below the ditch. In addition, a bedrock chute appears to be a barrier at low and moderate flows and potentially at high flows (USFWS 2004).

The Little Minam resident bull trout population also fails the criterion because it is isolated above a barrier falls which prevents the expression of a migratory life history and the opportunity for genetic exchange. As an isolated population, this group is at greater risk of extinction due to stochastic events.

Indian and Upper Grand Ronde populations fail the criterion due to a severely restricted spawning distribution. In both populations the definitive spawning distribution is undetermined. The lower portion of Indian Creek is located on private land where the potential downstream habitat and distribution has not been sampled. Biologists are certain that the population is not widely distributed and instead limited to a very small area. An unusual sighting of juvenile Chinook in the upper reaches confirms connectivity to the Grand Ronde River (J. Zakel, ODFW Grande Ronde Watershed District Office, personal communication).

Spawning distribution in the Upper Grand Ronde population is highly fragmented. Spawning activity is restricted to short segments in Limber Jim, Indiana, Fly, and Clear creeks. Even though definitive spawning distribution is undescribed, biologists believe it is severely limited (J. Zakel, ODFW Grande Ronde Watershed District Office, personal communication).

Abundance

In the absence of quantitative abundance data, the assessment of the abundance criterion is based on best guess estimates of adult bull trout generated by the Grande Ronde River Bull Trout

Recovery Team (USFWS 2004) and ODFW district biologists (Table 3). These estimates are supported by redd counts, trap data, field observations, and professional judgment. Populations of bull trout with fewer than 100 spawning adults are considered at risk of inbreeding and fail the interim risk criteria. The sum of interconnected populations also must exceed 1,000 adults to avoid risk of genetic drift (Rieman and Allendorf 2001). Thus, an SMU or an isolated population must total greater than 1,000 reproductive adults in order to pass this criterion.

Table 3. Estimated adult abundance of Grande Ronde bull trout populations.

Population	Estimated Adult Abundance	Pass/Fail
Wenaha	2,000	Pass
Lookingglass	200	Pass
Deer	<100	Fail
Minam	200	Pass
Little Minam	750	Fail
Lostine	500-1,000	Pass
Bear	<100	Fail
Hurricane	<100	Fail
Wallowa Lake	*Extinct population*	
Indian	<100	Fail
Catherine	<100	Fail
Upper Grande Ronde	<100	Fail

Although bull trout in the Little Minam are relatively abundant (approx. 750 adults), the population is isolated above a barrier falls which prohibits upstream movement of migratory bull trout and exchange of genetic material. The abundance criterion provides a guideline of 1,000 adults in order to avoid effects of genetic drift. Since this population has no opportunity for mixing with other populations and is fewer than 1,000 adults, it is considered at risk of genetic drift and therefore fails the abundance criterion.

The Hurricane population fails the criterion based on a 2002 population survey. Results of the survey estimated 198 bull trout, 88 of which were likely mature adults (>170 mm) (ODFW, Enterprise Fish District, unpublished report). In addition bull trout in Hurricane Creek are repeatably observed at extremely low densities.

Few data are available to assess abundance of Bear, Deer, Indian, Catherine, and Upper Grande Ronde populations. Field observations in all of these populations suggest bull trout are sparse and densities are very low (J. Zakel, ODFW Grande Ronde Watershed District Office, personal communication; B. Smith, ODFW Enterprise Field Office, personal communication). Based on these observations and professional judgment these populations fail the abundance criterion until they can be better assessed.

Productivity

Data are not available to quantitatively assess productivity and the intrinsic rate of population increase for bull trout in the Grande Ronde SMU. In the absence of these data a qualitative assessment of the productivity criterion is based on distribution and abundance, connectivity, life history, habitat quality, and presence of non-native species. A population passes the criterion if it is widely distributed and relatively abundant or if there are indications of an increasing or stable trend in abundance. These qualities suggest populations are minimally able to sustain current abundance. The expression of a migratory life history and connectivity between populations and diverse habitats also increases the probability of a population sustaining itself. The presence of non-native species or significant habitat degradation may negatively affect productivity and cause a population to fail the criterion if it is limited in other factors. The Bear,

Deer, and Hurricane populations fail the productivity criterion due to restricted distribution and low abundance, limited habitat quality, and the presence of brook trout. All other populations in the SMU pass the criterion (Table 4).

Table 4. Factors considered in the assessment of the productivity criterion of Grande Ronde bull trout.

Population	Factors	Pass/Fail
Wenaha	Extensive distribution and high abundance; habitat pristine, exclusively in designated Wenaha Wilderness Area; connectivity to Grande Ronde River supports migratory life history.	Pass
Lookingglass	Distribution and abundance appear minimally adequate for the population to sustain itself; expression of a migratory life history; redd counts since 1994 generally indicate a stable to increasing trend in abundance (USFWS 2004).	Pass
Deer	Limited distribution and abundance, migratory life history; stable but restricted habitat; brook trout absent.	Fail
Minam	Distribution extensive; abundance likely high; habitat pristine – 90% within a Wilderness Area; brook trout present; migratory life history.	Pass
Little Minam	Although isolated from other populations and only able to express a resident life history; spawning distribution is adequate and abundance stable; habitat in excellent condition completely within Eagle Cap Wilderness Area.	Pass
Lostine	Widely distributed and adequate abundance; large migratory component to the population (citation); habitat in good condition with the exception of temperature and flow issues in the lower river due to irrigation activities in the summer months; brook trout present.	Pass
Bear	Migratory life history; low abundance; brook trout present; habitat degraded in lower reaches, upper reaches and Goat Creek in designated wilderness.	Fail
Hurricane	Limited distribution and low abundance; abundant brook trout population; limited ability to express a migratory life history; lacks connectivity to other populations.	Fail
Wallowa Lake	*Extinct population*	--
Indian	Distribution restricted and likely low abundance; resident life history; high quality habitat; evidence suggests productivity minimally adequate to persist.	Pass
Catherine	Migratory component exists; distribution is adequate; low abundance; Chinook and steelhead available as food source; evidence suggests productivity minimally adequate to persist.	Pass
Upper Grande Ronde	Small migratory component exists; abundance and distribution limited; Chinook and steelhead present as food source; productivity minimally adequate to sustain the population.	Pass

Reproductive Independence

The Grande Ronde Bull Trout SMU is the only SMU where hatchery bull trout were released historically. In order to re-establish the bull trout fishery in Wallowa Lake, fingerling and legal sized Dolly Varden and bull trout were released between 1968 and 1978. These plantings did not establish a self-sustaining population, and the population is now considered extinct (USFWS 2004, Buchanan et al. 1997). In 1997 bull trout collected in the Little Sheep Creek canal were released into Wallowa Lake, however natural production has not been documented.

All existing populations in the Grande Ronde Bull Trout SMU are native fish sustained by natural production and pass the reproductive independence criterion. Hatchery bull trout programs do not currently exist in Oregon.

Hybridization

Brook trout were historically stocked into streams, rivers, and high alpine lakes in the Grande Ronde basin. Brook trout stocking programs no longer exist in moving waters in the basin. A population is considered to pass the hybridization criterion if brook trout x bull trout hybrids are

rare or non-existent. For most populations the degree of hybridization is not quantified, but professional judgment and the frequency of hybrids encountered during sampling provides a general indication. In cases where little or no information is available and bull trout and brook trout are sympatric, this review assumes hybrids are common.

Brook trout are present in the Wallowa, Minam, NF Minam, Lostine, and Grande Ronde rivers, and in Hurricane, Bear, Lookingglass, Lost, Limber Jim, Elk, Silver, Hoodoo, and Beaver creeks (USFWS 2004). In Hurricane Creek, 24% of the trout encountered during the 2002 population survey were bull trout x brook trout hybrids and therefore the population fails the criterion (ODFW, Enterprise Fish District, unpublished report). The degree of hybridization in other populations where brook trout are present is undocumented. These populations fail the hybridization criterion until data are available to demonstrate hybridization is rare (Table 5).

Table 5. Occurrence of brook trout and hybridization for Grande Ronde bull trout populations.

Population	Brook Trout	Pass/Fail
Wenaha	No	Pass
Lookingglass	Yes	Fail
Deer	No	Pass
Minam	Yes	Fail
Little Minam	No	Pass
Lostine	Yes	Fail
Bear	Yes	Fail
Hurricane	Yes	Fail
Wallowa Lake	*Extinct population*	
Indian	No	Pass
Catherine	No	Pass
Upper Grande Ronde	Yes	Fail

Assessment Conclusions

The Grand Ronde Bull Trout SMU includes 12 populations, of which over half are concentrated in the Wallowa River basin. The Wallowa Lake population was eliminated by the 1950s and is now considered extinct. The Wenaha River is one of Oregon's most pristine and undisturbed river systems and contains one of the states' healthiest bull trout populations. Abundance is considered precariously low in more than half of the populations in this SMU and hybridization with introduced brook trout has put many populations at risk, particularly in the Wallowa River. The SMU passes two of the six interim criteria and is classified as 'at risk' (Figure 1). Limited data sets and inferences from other information for populations in the SMU provide a qualified level of confidence in the assessment of the interim criteria.

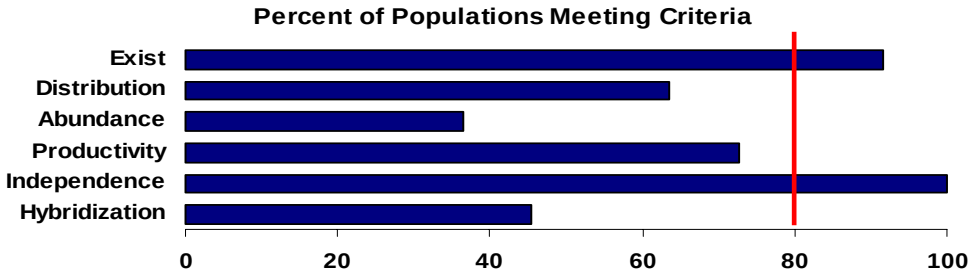

Figure 1. Assessment outcome for each of the six interim criteria with respect to the 80% threshold identified by the NFCP.